

**Amendments to the Claims**

Please cancel Claims 1-45, 68 and 137. Please amend Claims 47, 49, 51, 52, 54-60, 62, 67, and 134. Please add new Claims 140-156. The Claim Listing below will replace all prior versions of the claims in the application:

**Claim Listing**

- 1-45. (Canceled)
46. (Original) An isolated nucleic acid comprising the nucleotide sequence SEQ ID NO:5.
47. (Currently amended) An isolated nucleic acid having at least ~~80%~~ 90% nucleotide sequence identity ~~to a nucleic acid SEQ ID NO:5, and~~ encoding a polypeptide ~~comprising the amino acid sequence SEQ ID NO:6,~~ wherein said polypeptide has iron transport activity.
48. (Original) An isolated nucleic acid comprising a nucleotide sequence which consists of the coding region of human Ferroportin1.
49. (Currently amended) An isolated nucleic acid comprising a nucleotide sequence which encodes a naturally occurring allelic variant of a polypeptide consisting of the amino acid sequence ~~of a Ferroportin1 protein~~ SEQ ID NO:6, wherein said nucleic acid hybridizes under high stringency conditions to the complement of ~~a nucleic acid comprising the~~ sequence SEQ ID NO:5.
50. (Original) An isolated nucleic acid consisting of a sequence of at least 575 contiguous nucleotides complementary to a region between nucleotides 305 and 2020 of SEQ ID NO:5.

51. (Currently amended) An isolated nucleic acid comprising a nucleotide sequence which encodes a naturally occurring allelic variant of a polypeptide consisting of the amino acid sequence of a ~~Ferroportin1 protein~~ SEQ ID NO:6, wherein said nucleic acid molecule hybridizes under high stringency conditions to ~~the complement of a nucleic acid comprising~~ the sequence SEQ ID NO:5.
52. (Currently amended) An isolated nucleic acid which encodes a polypeptide having an iron transport function and is at least 457 amino acid residues long, wherein said ~~molecule nucleic acid~~ hybridizes under high stringency conditions to SEQ ID NO:5 or its complement.
53. (Canceled)
54. (Currently amended) An isolated nucleic acid comprising a nucleotide sequence encoding a polypeptide having iron transport activity, wherein said nucleotide sequence shares at least ~~80%~~ 90% sequence identity with the nucleotide sequence SEQ ID NO:5.
55. (Currently amended) An isolated nucleic acid encoding a fusion polypeptide having iron transport activity, said nucleic acid molecule comprising a nucleotide sequence encoding ~~all or a portion of an~~ amino acid sequence SEQ ID NO:6, and further comprising a nucleotide sequence encoding a heterologous portion of said fusion polypeptide.
56. (Currently amended) An isolated nucleic acid comprising a nucleotide sequence which encodes a protein comprising the amino acid sequence SEQ ID NO:6, ~~or SEQ ID NO:6 with conservative amino acid substitutions.~~
57. (Currently amended) A nucleic acid vector comprising nucleic acid having at least ~~80%~~ 90% nucleotide sequence identity to a nucleic acid encoding a polypeptide comprising the amino acid sequence SEQ ID NO:6, wherein said polypeptide has iron transport activity.

58. (Currently amended) A nucleic acid vector comprising nucleic acid encoding a fusion polypeptide having iron transport activity, said nucleic acid comprising a nucleotide sequence encoding ~~all or a portion of~~ an amino acid sequence SEQ ID NO:6, and further comprising a nucleotide sequence encoding a heterologous portion of said fusion polypeptide.
59. (Currently amended) A nucleic acid vector comprising nucleic acid comprising a nucleotide sequence which encodes a protein comprising the amino acid sequence SEQ ID NO:6, ~~or SEQ ID NO:6 with conservative amino acid substitutions.~~
60. (Currently amended) A nucleic acid vector comprising nucleic acid having at least 80% 90% nucleotide sequence identity to a nucleic acid encoding a polypeptide comprising the amino acid sequence SEQ ID NO:6, wherein the polypeptide has iron transport activity.
61. (Original) A nucleic acid expression vector comprising a coding sequence encoding human Ferroportin1.
62. (Currently amended) A nucleic acid vector comprising a nucleic acid with at least 80% 90% nucleotide sequence identity to the coding region of SEQ ID NO:5, wherein said nucleic acid encodes a polypeptide with iron transport activity.
- 63-64. (Canceled)
65. (Original) A cultured cell comprising the vector of Claim 59.
66. (Canceled)
67. (Currently amended) A cultured cell comprising nucleic acid having at least 80% 90% nucleotide sequence similarity to a nucleic acid encoding a polypeptide comprising the amino acid sequence SEQ ID NO:6, wherein said polypeptide has iron transport activity.

68. (Canceled)

69. (Previously presented) A cultured cell comprising nucleic acid comprising a nucleotide sequence which encodes a polypeptide having an iron transport function, wherein said nucleic acid hybridizes under high stringency conditions to SEQ ID NO:5 or its complement.

70. (Original) A method for producing a polypeptide, said method comprising culturing the cell of Claim 67 under conditions in which the cell produces the polypeptide.

71. (Original) A method for producing a polypeptide, said method comprising culturing the cell of Claim 67 under conditions in which the cell produces the polypeptide, and isolating the polypeptide from the cell or the culture medium.

72. (Original) An isolated nucleic acid comprising the nucleotide sequence SEQ ID NO:7.

73-133. (Canceled)

134. (Currently amended) An isolated nucleic acid comprising a nucleotide sequence which encodes a naturally occurring allelic variant of a polypeptide consisting of the amino acid sequence ~~of a Ferroportin1 protein~~ SEQ ID NO:6, wherein said nucleic acid hybridizes under high stringency conditions to a nucleic acid consisting of SEQ ID NO:7 or the complement of SEQ ID NO:7.

135. (Previously presented) An isolated nucleic acid comprising a contiguous portion of SEQ ID NO:7 or its complement, wherein the nucleic acid is 15 to 30 nucleotides.

136. (Previously presented) An isolated nucleic acid comprising a contiguous portion of SEQ ID NO:7 or its complement, wherein the nucleic acid is at least 15 nucleotides.

137. (Canceled)

138. (Previously presented) An isolated nucleic acid comprising a contiguous portion of SEQ ID NO:5 or its complement, wherein the nucleic acid is 15 to 30 nucleotides.

139. (Previously presented) An isolated nucleic acid comprising a contiguous portion of SEQ ID NO:5 or its complement, wherein the nucleic acid is at least 15 nucleotides.

140. (New) An isolated nucleic acid comprising a nucleotide sequence that encodes Ferroportin1 (SEQ ID NO:6).

141. (New) An isolated nucleic acid comprising a contiguous portion of SEQ ID NO:5.

142. (New) An isolated nucleic acid comprising a contiguous portion of SEQ ID NO:7.

143. (New) An isolated nucleic acid comprising the complement of nucleotide sequence SEQ ID NO:5.

144. (New) An isolated nucleic acid that hybridizes under high stringency conditions to a nucleic acid comprising the nucleotide sequence SEQ ID NO:5 or its complement, wherein the high stringency conditions are hybridization at 64-65 °C for 16 hours in 6x SSC/10 mM EDTA/0.5% SDS/5x Denhardt's solution/100 µg/ml sheared and denatured salmon sperm DNA, washing two times with 2x SSC/0.5% SDS solution at room temperature for 15 minutes each, and washing two times with 0.2x SSC/0.5% SDS at 65°C, for one hour each.

145. (New) An isolated nucleic acid comprising the complement of nucleotide sequence SEQ ID NO:7.

146. (New) An isolated nucleic acid that hybridizes under high stringency conditions to a nucleic acid comprising the nucleotide sequence SEQ ID NO:7 or its complement, wherein the high stringency conditions are hybridization at 64-65 °C for 16 hours in 6x SSC/10 mM EDTA/0.5% SDS/5x Denhardt's solution/100 µg/ml sheared and denatured salmon sperm DNA, washing two times with 2x SSC/0.5% SDS solution at room temperature for 15 minutes each, and washing two times with 0.2x SSC/0.5% SDS at 65°C, for one hour each.
147. (New) A nucleic acid probe that hybridizes to a nucleic acid comprising a sequence selected from the group consisting of: SEQ ID NO:5, SEQ ID NO:7, the complement of SEQ ID NO:5, and the complement of SEQ ID NO:7.
148. (New) A method for detecting a variant allele of a human *ferroportin1* gene, comprising obtaining *ferroportin1* DNA from a reference sample and *ferroportin1* DNA from a test sample to be compared to the reference as having a variant allele, and determining whether the reference DNA and test DNA differ in DNA sequence in the *ferroportin1* gene, wherein, if the test DNA differs in sequence from the reference DNA, the test DNA comprises a variant allele of a human *ferroportin1* gene.
149. (New) The method of Claim 148 wherein the DNA from the reference sample and the DNA from the test sample are amplified prior to determining their DNA sequences.
150. (New) A method for detecting the presence or absence of the nucleic acid of Claim 46, said method comprising hybridizing a probe specific to SEQ ID NO:5 to a target DNA, wherein if the probe hybridizes to the target DNA, the nucleic acid of Claim 46 is present, and if the probe does not hybridize to the target DNA, the nucleic acid of Claim 46 is absent.
151. (New) A method for detecting the presence or absence of the nucleic acid of Claim 72, said method comprising hybridizing a probe specific to SEQ ID NO:7 to a target DNA,

wherein if the probe hybridizes to the target DNA, the nucleic acid of Claim 72 is present, and if the probe does not hybridize to the target DNA, the nucleic acid of Claim 72 is absent.

152. (New) A method for distinguishing a *ferroportin1* allele from a reference allele, wherein the reference allele comprises SEQ ID NO:5 or SEQ ID NO:7, said method comprising:
  - a) amplifying DNA from target samples;
  - b) hybridizing one or more allele-specific probes to samples of the amplified DNA under high stringency conditions; and
  - c) detecting hybridization to the amplified DNA, wherein hybridization of the probe(s) to the sample indicates the presence of the allele, and the absence of hybridization indicates the absence of the allele.
153. (New) A method for distinguishing a *ferroportin1* allele from a reference *ferroportin1* allele, said method comprising hybridizing an allele-specific probe to a segment of target DNA in a test sample from an individual and to the corresponding segment of DNA from a reference sample under stringent conditions, wherein if the probe hybridizes to one of the segments of DNA, the segment of DNA to which the allele-specific probe hybridizes contains the allele of the allele-specific probe.
154. (New) A method for detecting the presence or absence of a *ferroportin1* allele, said method comprising amplifying DNA at a site on a target DNA using an allele-specific primer and a second primer, wherein if product results, the *ferroportin1* allele is present.
155. (New) A method for producing a fragment of a *ferroportin1* gene, said method comprising amplifying the nucleic acid of Claim 46.
156. (New) A method for producing a fragment of a *ferroportin1* gene, said method comprising amplifying the nucleic acid of Claim 72.